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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/738,344

12/17/2003

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74175 7590 04/30/2008  
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EXAMINER

ZIMMERMAN, JOHN J

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

04/30/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/738,344	<b>Applicant(s)</b> MORALES ET AL.	
	<b>Examiner</b> John J. Zimmerman	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 4/21/2008 (RCE papers).
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 11-14 and 16-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-14, 16 and 17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                      |                                                                   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                          | 6) <input type="checkbox"/> Other: _____                          |

## **SEVENTH OFFICE ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 21, 2008 has been entered.

### ***Amendments***

2. This Seventh Office Action is in response to the remarks and amendments submitted in applicant's communication titled "SUBMISSION UNDER 37 C.F.R. 1.114(c)" received April 21, 2008. Claims 11-14 and 16-17 are pending in this application. The pending claims are the claims submitted with the communication "AMENDMENT AFTER FINAL" received February 21, 2008 which has now been entered.

### ***Claim Rejections - 35 USC § 112, First Paragraph***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it

Art Unit: 1794

pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 11-14 and 16-17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

5. It is not clear where the originally filed disclosure contains support for the subject matter now claimed. The only reference to a "flat" sheet (e.g. claim 11, lines 4 and 6; claim 17, lines 4, 6 and 9) that has been readily found in the original disclosure has been found in paragraph [0019] where it is described that the "method is equally applicable to flat sheets". At best, this description would appear to describe the possible alternative manufacture of flat composite structures (not the currently claimed manufacture of curved composite structures). No further description of the use of "flat" sheets, the sequence of forming "flat" sheets, the use of superplastic "flat" sheets, the use of second "flat" sheets or the shape of the tool cavity associated with the use of "flat" sheets has been readily found in the original disclosure.

### ***Specification***

6. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The only reference to a "flat" sheet that has been readily found in the

original disclosure has been found in paragraph [0019] where it is described that the "method is equally applicable to flat sheets". No further description of the use of "flat" sheets, the sequence of forming "flat" sheets, the use of superplastic "flat" sheets, the use of second "flat" sheets or the shape of the tool cavity associated with the use of "flat" sheets (as currently claimed in independent claims 11-14 and 16-17) has been readily found in the original disclosure. The disclosure must provide an antecedent basis for the process steps described in the claims. Correction is required.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 11-14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seeliger (U.S. Patent 6,090,232) in view of Rashid (U.S. Patent 6,253,588).

9. Seeliger discloses a metal foam composite having a curvilinear shape (e.g. see column 3, lines 13-17; Figure 2). The foam metal can be made from a metal powder such as alloyed aluminum and light metal alloys (a term used in the metallurgical art to refer to alloys such as aluminum alloys) can be used for the solid metal sheets (e.g. see column 2, lines 14-20). The foam layer can be made by mixing the metal powder with a blowing agent (e.g. see column 2,

Art Unit: 1794

lines 42-48) to form a foamable semi-finished product. A preform composite material is assembled by sandwiching a foam forming layer (see numeral 2 in Figure 4) between first and second flat sheets (see numerals 3' and 4' in Figure 4) to form a flat sandwich structure (see numeral 6 in Figure 4; column 3, lines 6-12). The two dimensional flat composite material is then molded into a formed semifinished product (e.g. column 3, lines 13-18) by a one sided molding procedure (e.g. column 3, lines 29-31) and the semifinished product is placed in the cavity of a foaming mold for in situ foaming and final forming (e.g. see column 3, lines 42-49). Foam alloys of the types described would be expected to have metallic microphases (e.g. applicant's claim 8). Seeliger discloses that the blowing agent is a metal hydride in the prior art (e.g. see column 1, lines 16-23). Seeliger discloses that his metal foam composite can be used for car body panels in providing crash protection (e.g. see column 4, lines 31-44). Seeliger may differ from the claims in that Seeliger may not disclose the use of superplastic or quick plastic deforming to shape the semifinished product before the foaming step. Rashid, however, discloses that car body panels made with sheet metal can be made more easily using superplastically formable metal materials (e.g. see column 1, first paragraph) and quick plastic forming processes (e.g. see column 1, lines 5-12). Processing steps, forming steps and conditions are disclosed by Rashid (e.g. see claims 1-14). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use superplastically formable metal materials for the car body panels of Seeliger because Rashid discloses that superplastically formable materials have processing advantages over in car body panel manufacture if complex shapes are needed. In view of the advantages disclosed by Rashid, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use superplastic or quick

plastic deforming to shape the semifinished product of Seelinger because the semifinished products could be made in complex shapes that would be suitable for automobile parts. As disclosed by Seelinger, the semifinished product would then be placed in a mold cavity to perform the foaming step that would result in a cohesive foamed composite structure.

10. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seeliger (U.S. Patent 6,090,232) in view of Baumeister (U.S. Patent 5,151,246) and further in view of Rashid (U.S. Patent 6,253,588).

11. Seeliger discloses a metal foam composite having a curvilinear shape (e.g. see column 3, lines 13-17; Figure 2). The foam metal can be made from a metal powder such as alloyed aluminum and light metal alloys (a term used in the metallurgical art to refer to alloys such as aluminum alloys) can be used for the solid metal sheets (e.g. see column 2, lines 14-20). The foam layer can be made by mixing the metal powder with a blowing agent (e.g. see column 2, lines 42-48) to form a foamable semi-finished product. A preform composite material is assembled by sandwiching a foam forming layer (see numeral 2 in Figure 4) between first and second flat sheets (see numerals 3' and 4' in Figure 4) to form a flat sandwich structure (see numeral 6 in Figure 4; column 3, lines 6-12). The two dimensional flat composite material is then molded into a formed semifinished product (e.g. column 3, lines 13-18) by a one sided molding procedure (e.g. column 3, lines 29-31) and the semifinished product is placed in the cavity of a foaming mold for in situ foaming and final forming (e.g. see column 3, lines 42-49). Foam alloys of the types described would be expected to have metallic microphases (e.g.

Art Unit: 1794

applicant's claim 8). Seeliger discloses that the blowing agent is a metal hydride in the prior art (e.g. see column 1, lines 16-23), but does not disclose that the blowing agent is specifically titanium hydride as required by applicant's claim 17. Baumeister, however, discloses that titanium hydride blowing agent is a conventional metal hydride blowing agent that is used with aluminum alloy powders in the prior art (e.g. see Examples 1-7) and Baumeister also discloses typical foaming temperatures for various metal powder and blowing agent mixtures. In view of Baumeister, the use of a mixture of aluminum alloy powder with a titanium hydride blowing agent would have been obvious to one of ordinary skill in the art at the time the invention was made for the metal foam composite of Seeliger because Baumeister shows titanium hydride to be a common metal hydride blowing agent in the prior art and Baumeister also supplies further details on making metal foam compositions and their processing temperatures that Seeliger omits. Seeliger discloses that his metal foam composite can be used for car body panels in providing crash protection (e.g. see column 4, lines 31-44). Seeliger may differ from the claims in that Seeliger may not disclose the use of superplastic or quick plastic deforming to shape the semifinished product before the foaming step. Rashid, however, discloses that car body panels made with sheet metal can be made more easily using superplastically formable metal materials (e.g. see column 1, first paragraph) and quick plastic forming processes (e.g. see column 1, lines 5-12). Processing steps, forming steps and conditions are disclosed by Rashid (e.g. see claims 1-14). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use superplastically formable metal materials for the car body panels of Seeliger because Rashid discloses that superplastically formable materials have processing advantages over in car body panel manufacture if complex shapes are needed. In view of the advantages disclosed by



Rashid, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use superplastic or quick plastic deforming to shape the semifinished product of Seelinger because the semifinished products could be made in complex shapes that would be suitable for automobile parts. As disclosed by Seelinger, the semifinished product would then be placed in a mold cavity to perform the foaming step that would result in a cohesive foamed composite structure.

***Response to Arguments***

12. Applicant's arguments filed April 21, 2008 and February 21, 2008 have been fully considered but they are not persuasive.

13. As noted in the Advisory Action of March 5, 2008, the rejection of claims 11-14 and 16-17 are rejected under 35 U.S.C. 112, second paragraph, in the Sixth Office Action (paragraphs 5-7) has been overcome by the entry of applicant's amendment received February 21, 2008.

14. Applicant's arguments addressing the rejection of claims 11-14 and 16-17 under 35 U.S.C. 112, first paragraph, are not convincing. As noted above, it is not clear where the originally filed disclosure contains support for the pending claim limitations requiring a "flat" sheet (e.g. claim 11, lines 4 and 6; claim 17, lines 4, 6 and 9). The only reference to a "flat" sheet that has been readily found in the original disclosure has been found in paragraph [0019] where it is described that the "method is equally applicable to flat sheets". At best, this description would appear to describe the possible alternative manufacture of flat composite

structures (not the currently claimed manufacture of curved composite structures). Applicant's arguments that the use of flat sheets in applicant's process is within the purview of the skilled artisan are not convincing in view of the lack of adequate description for this embodiment in the original disclosure. Applicant's statement that the practitioner would not review applicant's paragraph [0019] in isolation, but would review the entirety of the disclosure and teachings as related to curved sheets and equally apply the teachings to flat sheets is noted (e.g. see page 5 of applicant's correspondence received February 21, 2008). Applicant, however, merely states that the teachings would be equally applicable to flat sheets without explaining exactly how the skilled artisan at the time the invention was made would find a "flat" sheet (e.g. claim 11, lines 4 and 6; claim 17, lines 4, 6 and 9), the sequence of forming "flat" sheets (e.g. claims 11 and 17), the use of superplastic "flat" sheets (e.g. claim 13), the use of second "flat" sheets (e.g. claim 11 and 17) or the shape of the tool cavity (e.g. claims 11 and 17) associated with the use of "flat" sheets would flow from the single reference to a "flat" sheet found in paragraph [0019].

15. Regarding applicant's arguments addressing the rejections under 35 U.S.C. 103(a) applying Seeliger (U.S. Patent 6,090,232) as a primary reference, the examiner notes that Seeliger specifically uses first and second flat sheets to form the preform composite. As noted in the rejections, above, Seeliger assembles a preform composite material by sandwiching a foam forming layer (see numeral 2 in Figure 4) between a first and second flat sheet (see numerals 3' and 4' in Figure 4) to form a flat two dimensional sandwich structure (see numeral 6 in Figure 4; column 3, lines 6-12). While Seeliger may further form or mold this flat two dimensional sandwich structure to create a formed semifinished product (e.g. column 3, lines 13-18) by a

Art Unit: 1794

molding procedure (e.g. column 3, lines 29-31) before final forming in a foaming mold (e.g. column 42-56), the applicant's claims do not require that the precursor structure must be flat when it is disposed in the forming tool curved cavity. The use of the transitional term "comprising" (e.g. claim 11, line 2; claim 17, line 2) is inclusive or open-ended and does not exclude additional, unrecited elements or method steps such as further molding the precursor structure before insertion into the forming tool curved cavity. See MPEP 2111.03. In any event, applicant also forms a prefoamed precursor structure into a curved precursor shape (claim 1, lines 9-15) and then foams the curved precursor shape in a curved tool cavity so that the foamed product is made into a curved shape that is defined by the curved cavity of the forming tool (e.g. claim 1, lines 21-22). Applicant's precursor structure is a *curved* precursor structure when it is introduced into the foaming step, just as Seeliger's semi-finished molded product is a contoured product when it is introduced into the foaming step.

### ***Conclusion***

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Zimmerman whose telephone number is (571) 272-1547. The examiner can normally be reached on 8:30am-5:00pm, M-F. Supervisor Rena Dye can be reached on (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1794

17. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

John J. Zimmerman  
Primary Examiner  
Art Unit 1794

/John J. Zimmerman/  
Primary Examiner, Art Unit 1794

jjz  
April 25, 2008